

REMARKS

The Office Action of November 29, 2005, is discussed in detail below.

Amendments to the Specification

Applicant has amended the paragraphs beginning on line 6, p. 1; line 18, p.3; line 8, p. 4; line 5, p. 8; line 14, p. 12; and line 18, p. 13 to update status information pertaining to co-pending applications incorporated by references. Several of the co-pending applications have been issued as patents and the references thereto in the instant application have been updated accordingly.

Applicant has amended the paragraph beginning on line 8, p. 17 to change the first instance of reference numeral "205" from normal text to bold text.

Applicant has amended the paragraph beginning on line 19, p. 40 to indicate that the output is measured between terminals 735 and 715, rather than between terminals 715 and 750. Support for this amendment can be found on lines 4-5 of p. 37 ("The measured resistance between bottom terminal 715 and intermediate terminal 735 corresponds to the output.")

Claim Amendments

Applicant has withdrawn claims 1 – 18 pursuant to a prior restriction requirement imposed by the Examiner.

Applicant has amended claim 19 to specifically recite a first terminal, a second terminal, and a third terminal in electrical communication with a phase change material instead of three or more terminals in electrical communication with a phase change material. This amendment is supported by the original disclosure, including original claim 19, Figure 2 and the discussion

thereof. Applicant has also amended claim 19 to recite that the first signal is applied between a first terminal and a second terminal (instead of between a first pair of terminals) and that the second signal is applied between a first terminal and a third terminal (instead of between a second pair of terminals). Applicant has also amended claim 19 to incorporate the measuring resistance step of original claim 29. These amendments are supported by the original disclosure, including original claim 19, EXAMPLE 5 beginning on p. 35 and EXAMPLE 6, beginning on p. 41. (See, for example, lines 20-22, p. 40 ("Input 1 is the input signal applied between terminals 715 and 750, input 2 is the input signal applied between terminals 735 and 750, and the output is measured between 735 and ~~750~~ 715 after application of the two input signals."), lines 2-5, p. 42 ("As in the foregoing EXAMPLE 5, the input signals of the logic device of this example are provided in the form of current pulses between a first pair of terminals (terminals 715 and 750) and a second pair of terminals (terminals 735 and 750) and the output corresponds to the resistance between bottom terminal 715 and intermediate terminal 735."), and the tables on p. 41 and 42.)

Applicant has amended claims 26 – 28 to refer to specific terminals from among the set of first, second and third terminals referred to in amended claim 19.

Applicant has cancelled original claim 29.

Claim Rejections – 35 USC 102(e)**From Paragraph 2 of Office Action**

Claims 19 – 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Ha et al. (US 2004/01666604 A1).

US 2004/01666604 A1 to Ha et al. (“Ha”) discloses in Figure 7 a method for operating an electronic device comprising a phase change material and three terminals in electrical communication therewith where the method includes a step of applying a first signal between a first pair (79a' and 107a) of terminals and applying a second signal between a second pair (79b' and 107a) of terminals.

Applicant's amended claim 19 discloses a method for operating an electronic device comprising a phase change material and three terminals in electrical communication therewith where the method includes a step of applying a first signal between a first pair of terminals (e.g. 715 and 750 (Example 6)), applying a second signal between a second pair of terminals (e.g. 735 and 750 (Example 6)) and measuring the resistance between a third pair of terminals (e.g. 715 and 735 (Example 6)).

Ha fails to teach or suggest Applicant's step of measuring the resistance between a third pair of terminals. The invention depicted in Figure 7 of Ha is an embodiment in which a pair of memory cells are formed in a single active region and which share a common phase change material layer. (Ha, Paragraph [0038]) The two memory cells of Ha each include two terminals: One memory cell is programmed with terminals 79a' and 107a and a second memory cell is programmed with terminals 79b' and 107a. Each memory cell is operated as a two-terminal device in which the contents of the memory cell is read by measuring the resistance between the two terminals used to program each cell. Thus, the read operation of Ha (as referred to in

Paragraph [0008] of Ha) involves the step of measuring the resistance between terminals 79a' and 107a to read one memory cell and the step of measuring the resistance between terminals 79b' and 107a to read the second memory cell. Ha does not teach a method of programming between one pair of terminals and reading between a different, non-programmed pair of terminals.

Ha's step of applying a signal between terminals 79a' and 107a is analogous to Applicant's step of applying a signal between terminals 715 and 750 and Ha's step of applying a signal between terminals 79b' and 107a is analogous to Applicant's step of applying a signal between terminals 735 and 750. Whereas the method Ha further contemplates a reading step between either terminals 79a' and 107a or terminals 79b' and 107a (which are analogous to reading steps by Applicant between terminals 715 and 750 or terminals 735 and 750), Ha fails to teach or suggest a reading step between terminals 79a' and 79b' (which would be analogous to Applicant's claimed step of measuring the resistances between a third pair of terminals).

Applicant's measuring resistance step is a reading step that occurs between two terminals (715 and 735) between which no signal was applied. Applicant's method teaches the application of a first signal between terminals 715 and 750 and application of a second signal between terminals 735 and 750. Applicant's measuring resistance step thus occurs between two terminals, 715 and 735, between which no signal was applied. The analogous step in the invention of Ha would be a measuring resistance step between terminals 79a' and 79b'. Ha, however, fails to teach such a step and such a step would be contrary to Ha's purpose of providing two independent memory cells, each of which stores a separate piece of information.

Since Ha fails to teach each and every element of Applicant's amended claim 19, Applicant believes that amended claim 19 is patentable over Ha and that this rejection is overcome.

Applicant respectfully requests that this rejection be removed and respectfully submits that claims 19 – 30 are allowable.

SUMMARY

The remaining claims in the application are claims 19 – 30. In view of the above amendments and remarks, Applicant believes that the rejection of claims 19 – 30 has now been overcome and that these claims are allowable over the reference cited by the Examiner. Applicant respectfully requests withdrawal of all outstanding rejections and respectfully submits that the application stands in condition for allowance. Should the Examiner have any questions or suggestions regarding this amendment, the Examiner is respectfully asked to contact Applicant's representative at the telephone number or email address listed below.

Respectfully submitted,



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